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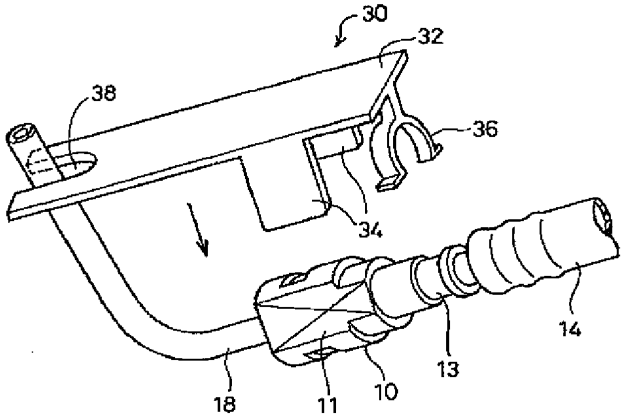
(54)【発明の名称】　管体接続構造

(57)【要約】

【課題】　第１の管体と第２の管体とをコネクタを介在させて接続する場合に、両管体の相対的な回転を防止する。

【解決手段】　第２の管体１８が差し込まれて第１の管体１４と第２の管体１８とを接続するコネクタ１０には、クリップ３０が後付け固定さる。クリップ３０は、平板状の上板３２を有し、その長手方向の端部中央には、第２の管体１８の外径より僅かに広い幅の切欠３８が形成されている。このクリップ３０は、その対向間隔がコネクタ１０の二面幅１１の幅寸法より狭くされた対向板３４でコネクタ１０を挟持して一体化し、クリップ腕部３６によりこのコネクタ１０に固定される。そして、切欠３８には、第２の管体１８がコネクタ１０の外部で曲げられて入れ込まれ、クリップ３０と第２の管体１８とは、コネクタ１０の内部の直線管路の軌跡の延長線上から外れた位置で係合することになる。



【特許請求の範囲】

【請求項１】　第１の管体と第２の管体とを接続する管体接続構造であって、

前記第１の管体の端部に水密に固定されて前記第２の管体が差し込まれ、該差し込まれた第２の管体の軸方向の抜止を図る抜止手段と、前記第２の管体の外周に接触し該管体を水密に保持するシール手段とを有するコネクタと、

該コネクタ又は前記第１の管体に固定され、前記第２の管体の側に伸びた腕部を有するコネクタ固定体と、を備え、

該腕部は、前記コネクタに差し込まれた範囲における前記第２の管体の直線管路の軌跡の延長線上から外れた位置で、前記第２の管体若しくは前記第２の管体から外部に伸びた延出部に係合する係合部を有することを特徴とする管体接続構造。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】本発明は、第１の管体と第２の管体とを接続する管体接続構造に関する。

【０００２】

【従来の技術】従来、この種の管体接続構造では、第１の管体と第２の管体との接続をコネクタを介在させて行ない、このコネクタには第１の管体がその端部で水密に固定され、第２の管体が差し込まれる。この際、コネクタでは、差し込まれた第２の管体の軸方向の抜止と、Ｏリング等による第２の管体の外周での水密保持が図られている。

【０００３】具体的な構成を例示して説明すると、図１０に示すように、コネクタ１０には、その一端の竹の子口１２に第１の管体１４が図示しない締め付け具により水密に固定されている。また、コネクタ１０の収納孔１６には、第２の管体１８が差し込まれており、この第２の管体１８は、収納孔１６の内周壁に埋設されたＯリング２０，２２によりシールされている。しかも、コネクタ１０の端部収納孔２４には、底抜けの椀状をなし等ピッチでその周壁がすり割られた管体抜止具２６が収納されており、この管体抜止具２６が第２の管体１８に設けられた拡張鍔部２８に係合することで、第２の管体１８の抜止が図られている。なお、一般的には、コネクタ１０は機械的強度に優れた樹脂（例えば、ポリアミド等）から形成され、第１の管体１４はある程度の柔軟性を有する樹脂（ポリアミド等）やゴム（エチレン・プロピレン・ジエン共重合物（ＥＰＤＭ）等）から形成され、第２の管体１８はコネクタ１０への差し込み，拡張鍔部２８の形成並びに強度が必要であることから金属（鉄，ステンレス等）から形成されている。もっとも、第１の管体１４を金属から形成してもよいことは勿論である。

【０００４】

【発明が解決しようとする課題】このような管体接続構造では、第２の管体１８をコネクタ１０に差し込むという一操作で第１の管体１４と第２の管体１８とを接続することができるため、様々な場所での管体接続に使用されている。しかし、コネクタ１０に差し込まれた範囲における第２の管体１８の直線管路を中心とした第２の管体１８の回転動作は、コネクタ１０にて規制されていない。よって、第１の管体１４、延いてはコネクタ１０に対して第２の管体１８が相対的に回転する場合が有り得る。例えば、第１の管体１４と第２の管体１８の接続の後に、その第１の管体１４や第２の管体１８を所定の固定構造物に固定する場合には、これら管体の固定構造物への固定の際に第２の管体１８を上記のように相対的に回転させてしまう場合がある。また、固定構造物への管体の固定の後に両管体をコネクタ１０により接続した場合であっても、いずれかの管体がその固定対象物の予期しない移動等に追従して動くと、第２の管体１８が上記のように相対的に回転してしまう場合もある。そして、このようにして第２の管体１８が相対的に回転すると、第２の管体１８の外周に接触しているＯリング２０，２２に摩耗やヘタリ等が起き、シール性が低下する。

【０００５】本発明は、上記問題点を解決するためになされ、第１の管体と第２の管体とをコネクタを介在させて接続する場合に、両管体の相対的な回転を防止することを目的とする。

【０００６】

【課題を解決するための手段およびその作用・効果】かかる課題を解決するため、本発明の管体接続構造は、第１の管体と第２の管体とを接続する管体接続構造であって、前記第１の管体の端部に水密に固定されて前記第２の管体が差し込まれ、該差し込まれた第２の管体の軸方向の抜止を図る抜止手段と、前記第２の管体の外周に接触し該管体を水密に保持するシール手段とを有するコネクタと、該コネクタ又は前記第１の管体に固定され、前記第２の管体の側に伸びた腕部を有するコネクタ固定体と、を備え、該腕部は、前記コネクタに差し込まれた範囲における前記第２の管体の直線管路の軌跡の延長線上から外れた位置で、前記第２の管体若しくは前記第２の管体から外部に伸びた延出部に係合する係合部を有する。

【０００７】上記構成を有する本発明の管体接続構造では、第１の管体の端部に水密に固定されたコネクタに第２の管体が差し込まれると、この第２の管体は、抜止手段により軸方向に抜止され、シール手段により水密に保持される。このため、第１，第２の両管体は、コネクタを介在させて接続される。

【０００８】その一方、本発明の管体接続構造では、コネクタ又は第１の管体からは、これに固定されたコネクタ固定体の腕部が第２の管体の側に伸びており、この腕部の係合部と第２の管体とは、若しくはこの係合部と第２の管体から外部に伸びた延出部とは、コネクタに差し

込まれた範囲における第２の管体の直線管路の軌跡の延長線上から外れた位置で係合している。このため、直線管路の軌跡を中心として第１，第２のいずれかの管体を相対的に回転させるような力が働いても、直線管路の軌跡の延長線上から外れた位置での第２の管体若しくは第２の管体から外部に伸びた延出部の係合により、第２の管体はこの力に抗する力を受けて回転することはない。

【０００９】

【発明の他の態様】本発明は、以下のような他の態様を採ることも可能であり、第１の態様では、前記コネクタ固定体は、前記コネクタの外観形状に倣ったコネクタ装着凹所を有する。

【００１０】この第１の態様では、コネクタ固定体をそのコネクタ装着凹所にコネクタが嵌り込むようにして後付けできるので、コネクタを介在させて第１，第２の両管体を接続した既存の管体接続構造を、管体の相対的な回転が生じないものに簡便に改造できる。

【００１１】

【発明の実施の形態】次に、本発明に係る管体接続構造の実施の形態を実施例に基づき説明する。図１は、第１実施例の管体接続構造の概略分解斜視図である。なお、以下の説明に当たっては、上記した従来の管体接続構造における部材と同一の部材については同一の符号を用いてその説明を省略することとする。

【００１２】図１に示すように、この第１実施例の管体接続構造は、第１の管体１４と第２の管体１８とをコネクタ１０を介在させて接続する。そして、この第１の管体１４，第２の管体１８並びにコネクタ１０に加え、当該コネクタに後付け固定されるクリップ３０を有する。

【００１３】クリップ３０は、平板状の上板３２と、その両側面から下方に突出した一対の対向板３４とその長手方向の一端側中央に下方に向けて設けられたクリップ腕部３６とを有する。そして、この上板３２の長手方向の他端側中央は、第２の管体１８の外径より僅かに広い幅の切欠３８とされている。また、対向板３４の対向間隔は、コネクタ１０の外周に形成された二面幅１１の幅寸法より僅かに狭くされている。更には、クリップ腕部３６の有効径は、コネクタ１０の第１の管体１４側に形成された小径部１３の外径より僅かに小さくされている。このような寸法並びに形状のクリップ３０は、機械的強度を有するポリアセタール等の樹脂を用いて成形されており、対向板３４並びにクリップ腕部３６は、対向間隔が広げられたり径が拡張されたりすると弾発性を発揮する。そして、このクリップ３０は、図示するように、クリップ腕部３６がコネクタ１０における小径部１３と対向し、切欠３８がコネクタ１０に差し込まれた第２の管体１８の側に位置するような向きで、図中矢印で示すようにコネクタ１０にその上方から組み付けられる。図２に、クリップ３０をコネクタ１０に組み付けた状態の軸線方向に沿った概略断面を示す。

【００１４】このようにクリップ３０が組み付けられると、図２の３－３線断面図である図３に示すように、その対向間隔が二面幅１１の幅寸法より狭い対向板３４により二面幅１１が挟持されるので、クリップ３０とコネクタ１０とは、一体化する。また、その有効径が小径部１３の外径より小さいクリップ腕部３６により小径部１３が把持されるので、クリップ３０はコネクタ１０に固定される。そして、クリップ３０の切欠３８には、図１および図２に示すように、第２の管体１８がコネクタ１０の外部で曲げられて入れ込まれる。つまり、クリップ３０は、コネクタ１０に差し込まれた範囲における第２の管体１８の管体の直線管路の軌跡の延長線上から外れた位置で、この切欠３８により第２の管体１８と係合することになる。

【００１５】以上説明した実施例の管体接続構造では、コネクタ１０自体は、管体抜止具２６と第２の管体１８の拡張鍔部２８とにより第２の管体１８の抜止を図る点と、Ｏリング２０，２２により第２の管体１８のシールを図る点とでは、従来のものと変わるところはなく、このコネクタ１０により第１の管体１４と第２の管体１８とを接続する。

【００１６】その一方、本実施例の管体接続構造では、クリップ３０をコネクタ１０と一体化させ、しかもこのクリップ３０には、第２の管体１８を、コネクタ１０の内部における直線管路の軌跡の延長線上から外れた位置で係合させた。このため、この直線管路の軌跡を中心として第１の管体１４，第２の管体１８のいずれかの管体を相対的に回転させるような力（回転力）が働いても、第２の管体１８とクリップ３０の係合位置が直線管路の軌跡の延長線上から外れていることから、第２の管体１８はこの回転力に抗する力を受けて回転することはない。

【００１７】また、クリップ３０は、対向板３４の間にコネクタ１０の二面幅１１を嵌り込ませてコネクタ１０に後付けされるので、次のような利点がある。

①クリップ３０は、コネクタ１０への第２の管体１８の差し込み後にコネクタ１０に固定できるので、第２の管体１８の差し込み作業をなんら阻害することがない。

②クリップ３０の切欠３８へはコネクタ１０の外部で曲げられた第２の管体１８自体が係合するので、特別な部材を必要とせず、コスト的に有利である。

③既存のコネクタ１０を二面幅１１と小径部１３を有するコネクタに交換するだけで、第２の管体１８の相対的な回転が生じない管体接続構造に簡便に改造できる。

④第２の管体１８は、コネクタ１０の外部で切欠３８の係合する範囲だけ曲げられていればよいので、第２の管体１８の他端の接続対象物がコネクタ１０の内部における直線管路の軌跡の延長線上にあっても支障はない。具体的に説明すると、図２に一点鎖線で示すように切欠３８の係合箇所で第２の管体１８がＵ字状に湾曲していれ

ばよい。

【００１８】次に、他の実施例について説明する。なお、以下の実施例の説明に当たっては、上記の実施例と異なる構成について説明することとする。

【００１９】第２実施例の管体接続構造では、図４の斜視図および軸線方向に沿った概略断面である図５に示すように、コネクタ１０に替わるコネクタ１０Ａを有する。このコネクタ１０Ａは、第２の管体１８の差し込み側端部に、湾曲断面の突出部４０を連続して有する。そして、この突出部４０の長手方向の端部中央は、第２の管体１８の外径より僅かに広い幅の切欠４２とされている。

【００２０】この第２実施例の管体接続構造でも、この切欠４２には、図４および図５に示すように、第２の管体１８が曲げられて入れ込まれ、第２の管体１８は、コネクタ１０の内部の直線管路の軌跡の延長線上から外れた位置で、切欠４２により突出部４０と係合することになる。このため、第２実施例の管体接続構造によっても、第２の管体１８を相対的に回転させることはない。また、第２実施例の管体接続構造では、当初から突出部４０がコネクタ１０に一体化されているので、部品管理が容易となり好ましい。この場合、突出部４０がコネクタ１０に一体化されていても、第２の管体１８の差し込み後に第２の管体１８を曲げて切欠４２に入れ込むことができるので、第２の管体１８の差し込み作業を阻害することはない。なお、突出部４０は、クリップ３０のように平板断面でコネクタ１０に設けられていてもよいことは勿論である。

【００２１】第３実施例の管体接続構造では、その概略分解斜視図である図６と組み付け状態での軸線方向に沿った概略断面である図７に示すように、クリップ３０に替わるクリップ３０Ａを有する。このクリップ３０Ａは、コネクタ１０をその上面から覆う程度の長さの平板状の上板３２Ａを有し、クリップ３０と同様に、その両側面には対向板３４を有し、長手方向の一端側中央にはクリップ腕部３６を有する。そして、上板３２Ａの長手方向の他端側中央には、その下方に管体係合腕４４を有する。この管体係合腕４４は、図７の８－８線拡大断面図である図８に示すように、その断面が第２の管体１８を把持するよう円弧状の湾曲断面とされており、その内径は第２の管体１８の外径より僅かに大きくされている。また、管体係合腕４４は、クリップ３０Ａが対向板３４，クリップ腕部３６によりコネクタ１０に一体・固定されると、図示するようにコネクタ１０の端部から第２の管体１８の管路に倣って伸びた直線部分がその途中で湾曲するよう形成されている。

【００２２】この第３実施例の管体接続構造では、クリップ３０Ａの管体係合腕４４にその経路に倣うよう第２の管体１８が曲げられて入れ込まれる。よって、この第３実施例の管体接続構造であっても、第２の管体１８は、コネクタ１０の内部の直線管路の軌跡の延長線上から外れた位置で、クリップ３０Ａの管体係合腕４４により係合・把持される。このため、第３実施例の管体接続構造によっても、第２の管体１８を相対的に回転させることはない。なお、第２の管体１８は、管体係合腕４４の直線部分に入れ込まれてからコネクタ１０に差し込まれ、その後に湾曲されて管体係合腕４４に係合・把持される。

【００２３】第４実施例の管体接続構造では、上記したクリップ３０，３０Ａに替わり図９の概略斜視図に示すクリップ５０を用いる。このクリップ５０は、クリップ３０における上板３２を一壁面として有するボックス形状で形成されている。そして、クリップ５０は、対向板３４に替わる側面板５２を有し、蓋５４により側面板５２の開口部を閉鎖するよう構成されている。この場合、側面板５２の対向間隔はコネクタ１０の二面幅１１の幅寸法より僅かに広くされている。蓋５４には、先端に突起を有する係合腕５６が設けられており、側面板５２の一方には、この係合腕５６が入り込んで係合する係合部５８が設けられている。なお、補強のためにクリップ５０の一端には補強板６０が設けられており、この補強板６０には小径部１３が無理なく入り込む開口６２が空けられている。

【００２４】このクリップ５０にあっては、蓋５４が開いている状態でコネクタ１０に組み付けられ、側面板５２の間に二面幅１１が挟まれるように、コネクタ１０がクリップ５０に収納される。次いで、蓋５４が閉められると、クリップ５０は、コネクタ１０を取り囲んでこのコネクタ１０と一体となり固定される。そして、第２の管体１８は、コネクタ１０の外部で曲げられて上板３２の切欠３８に入れ込まれ、コネクタ１０の内部の直線管路の軌跡の延長線上から外れた位置で、上板３２と係合する。このため、第４実施例の管体接続構造によっても、第２の管体１８を相対的に回転させることはない。

【００２５】以上本発明の実施例について説明したが、本発明は上記の実施例や実施形態になんら限定されるものではなく、本発明の要旨を逸脱しない範囲において種々なる態様で実施し得ることは勿論である。

【００２６】例えば、第２の管体１８を曲げて切欠３８に入れ込むことに替え、以下のように構成することもできる。つまり、第２の管体１８に、図２において二点鎖線で示すように、その外部に伸びる延出部１８ａを固定して設け、この延出部１８ａが切欠３８に入り込むことで、第２の管体１８と上板３２とをコネクタ１０の内部の直線管路の軌跡の延長線上から外れた位置で係合させることもできる。

【図面の簡単な説明】

【図１】第１実施例の管体接続構造の概略分解斜視図。

【図２】クリップ３０をコネクタ１０に組み付けた状態の軸線方向に沿った概略断面図。

【図３】図２の３−３線断面図。

【図４】第２実施例の管体接続構造の概略斜視図。

【図５】第２実施例の管体接続構造におけるコネクタ１０Ａをその軸線方向に沿って断面視して示す概略断面図。

【図６】第３実施例の管体接続構造の概略分解斜視図。

【図７】クリップ３０Ａをコネクタ１０に組み付けた状態の軸線方向に沿った概略断面図。

【図８】図７の８−８線拡大断面図。

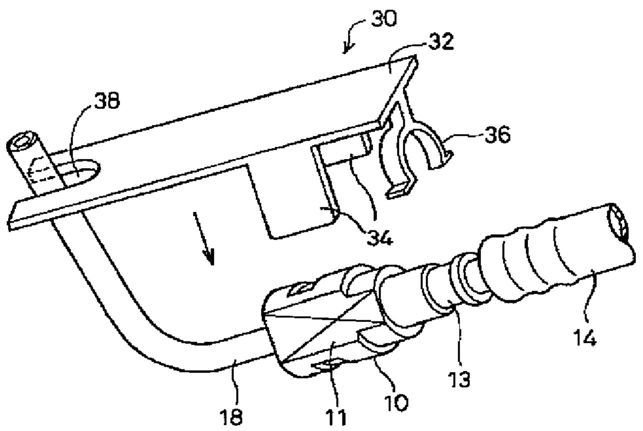
【図９】第４実施例の管体接続構造におけるクリップ５０の概略斜視図。

【図１０】従来の管体接続構造におけるコネクタをその軸線方向に沿って断面視して示す概略断面図。

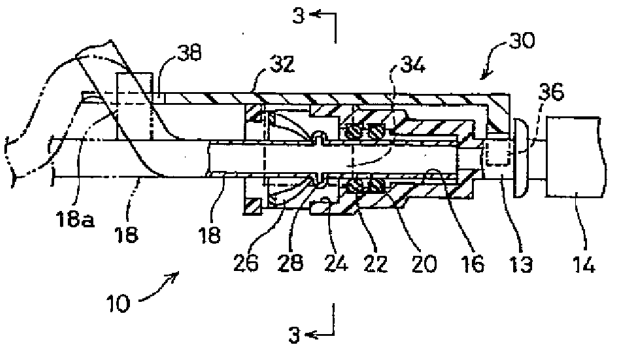
【符号の説明】

１０，１０Ａ…コネクタ
１１…二面幅
１２…竹の子ロ
１３…小径部
１４…第１の管体
１６…収納孔
１８…第２の管体
１８ａ…延出部
２０，２２…Ｏリング
２４…端部収納孔
２６…管体抜止具
２８…拡張鍔部
３０，３０Ａ…クリップ
３２，３２Ａ…上板
３４…対向板
３６…クリップ腕部
３８…切欠
４０…突出部
４２…切欠
４４…管体係合腕
５０…クリップ
５２…側面板
５４…蓋
５６…係合腕
５８…係合部
６０…補強板
６２…開口

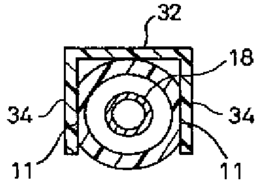
【図１】



【図２】



【図３】



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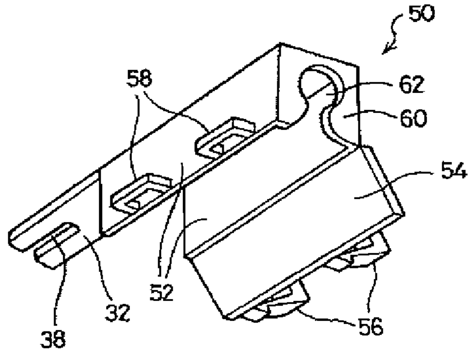

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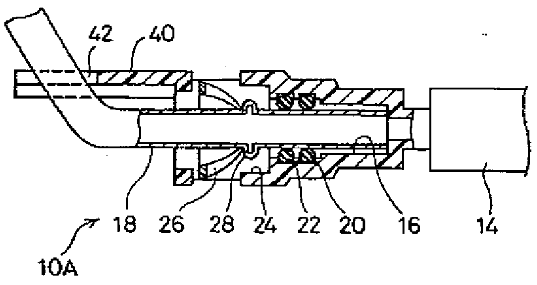
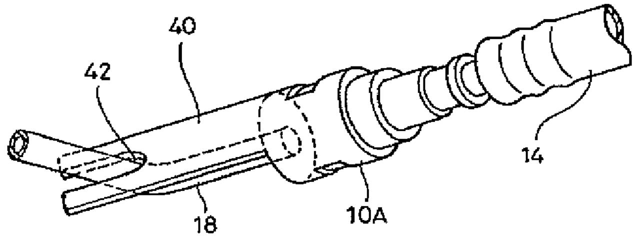
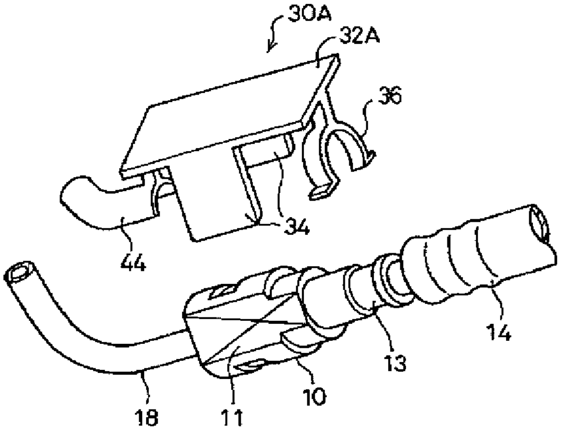


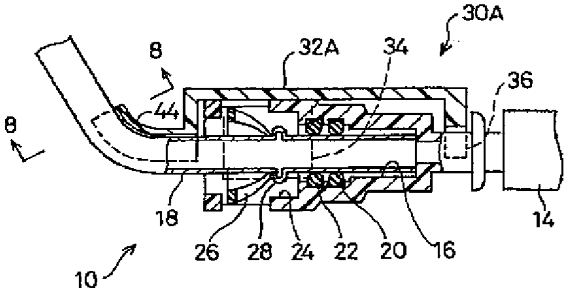
【図4】



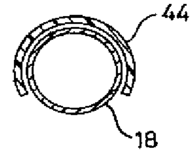
【図6】



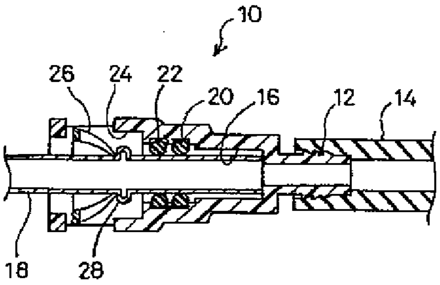
【図7】



【図8】



【図１０】



PATENT ABSTRACTS OF JAPAN

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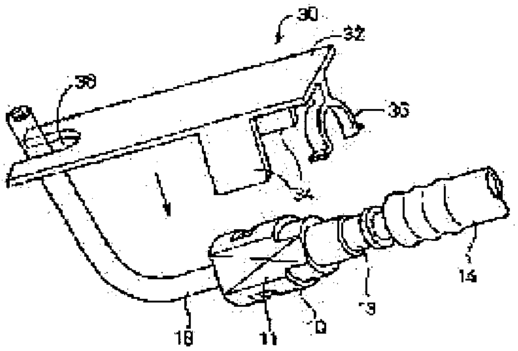
(54) PIPE CONNECTING STRUCTURE

(57)Abstract:

PROBLEM TO BE SOLVED: To prevent relative rotation of both pipes in the case of connecting a first pipe and a second pipe to each other through a connector.
SOLUTION: A clip 30 is post-fitted to a connector 10 where a second pipe 18 is inserted to connect a first pipe 14 and the second pipe 18 to each other. The clip 30 has a plate-like upper plate 32, and a notch 38 with a width larger than the outside diameter of the second pipe 18 is formed in the center of the longitudinal end part of the plate. The clip 30 is so constructed that the connector 10 is clamped by opposite parts 34, the opposite space of which is made smaller than the width of a width across flat 11 of the connector 10 to be united in a body, and fixed to the connector 10 by a clip arm part 36. The second pipe 18 is bent outside the connector 10 to be put in the notch 38, whereby the clip 30 and the second pipe 18 are engaged with each other in a position away from an extension of a locus of a straight pipe conduit in the connector 10.



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CLAIMS

[Claim(s)]
[Claim 1] A **** means to be the shell connection structure of connecting the 1st shell and 2nd shell, and for it to be fixed to the edge of said 1st shell watertight, and for said 2nd shell to be inserted, and to plan **** of the shaft orientations of this 2nd shell by which the difference was carried out, The connector which has a seal means to contact the periphery of said 2nd shell and to hold this shell watertight, It is fixed to this connector or said 1st shell, and has the connector fixed object which has the arm extended to said 2nd shell side. This arm Shell connection structure characterized by having the engagement section which engages with the extension section extended outside from said the 2nd shell or said 2nd shell in the location from which it separated from the production of the locus of the straight-line duct of said 2nd shell in the range inserted in said connector.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the shell connection structure of connecting the 1st shell and 2nd shell.
[0002]
[Description of the Prior Art] Conventionally, with this kind of shell connection structure, a connector is made to intervene, connection between the 1st shell and the 2nd shell is made, the 1st shell is fixed to this connector watertight at that edge, and the 2nd shell is inserted. Under the present circumstances, in the connector, watertight maintenance on **** of the shaft orientations of the 2nd inserted shell and the periphery of the 2nd shell by an O ring etc. is achieved.
[0003] If a concrete configuration is illustrated and explained, as shown in drawing 10 , it is being fixed to the bamboo shoot opening 12 of the end by the watertight at the connector 10 with the bolting implement which the 1st shell 14 does not illustrate. Moreover, the 2nd shell 18 is inserted in the receipt hole 16 of a connector 10, and the seal of this 2nd shell 18 is carried out to it with O rings 20 and 22 laid under the inner circle wall of the receipt hole 16. the shape of and a bowl unbounded to the edge receipt hole 24 of a connector 10 -- making -- etc. -- the slot **** shell **** implement 26 is contained for that peripheral wall in the pitch, and **** of the 2nd shell 18 is planned by engaging with the extended flange 28 by which this shell **** implement 26 was formed in the 2nd shell 18. In addition, the resin the connector 10 generally excelled [resin] in the mechanical strength (It is formed [for example,] from a polyamide etc.) and is formed from resin (polyamide etc.) and rubber which have a certain amount of [the 1st shell 14] flexibility (ethylene propylene diene copolymerization object (EPDM) etc.). Since the 2nd shell 18 needs reinforcement for the plug to a connector 10, and the formation list of the extended flange 28, it is formed from the metal (iron, stainless steel, etc.). But of course, the 1st shell 14 may be formed from a metal.
[0004]
[Problem(s) to be Solved by the Invention] With such shell connection structure, since the 1st shell 14 and 2nd shell 18 are connectable by one actuation of inserting the 2nd shell 18 in a connector 10, it is used for shell connection in various locations. However, rotation actuation of the 2nd shell 18 centering on the straight-line duct of the 2nd shell 18 in the range inserted in the connector 10 is not regulated by the connector 10. Therefore, the case where the 2nd shell 18 rotates relatively to the 1st shell 14, as a result a connector 10 is possible. For example, when it fixes the 1st shell 14 and 2nd shell 18 to the predetermined fixed structure after connection of the 1st shell 14 and the 2nd shell 18, the 2nd shell 18 may be relatively rotated as mentioned above in the case of immobilization in the fixed structure of these shells. Moreover, if one of shells follows and moves to the migration which the fixed object does not expect even if it is the case where both shells are connected by the connector 10 after immobilization of the shell to the fixed structure, the 2nd shell 18 may rotate relatively as mentioned above. And if it does in this way and the 2nd shell 18 rotates relatively, wear, a permanent set in fatigue, etc. will occur in O rings 20 and 22 in contact with the periphery of the 2nd shell 18, and seal nature will fall.

[0005] This invention is made in order to solve the above-mentioned trouble, and when making a connector intervene and connecting the 1st shell and 2nd shell, it aims at preventing relative rotation of both shells.
[0006]
[The means for solving a technical problem, and its operation and effectiveness] In order to solve this technical problem, the shell connection structure of this invention A **** means to be the shell connection structure of connecting the 1st shell and 2nd shell, and for it to be fixed to the edge of said 1st shell watertight, and for said 2nd shell to be inserted, and to plan **** of the shaft orientations of this 2nd shell by which the difference was carried out, The connector which has a seal means to contact the periphery of said 2nd shell and to hold this shell watertight, It is fixed to this connector or said 1st shell, and has the connector fixed object which has the arm extended to said 2nd shell side. This arm It has the engagement section which engages with the extension section extended outside from said the 2nd shell or said 2nd shell in the location from which it separated from the production of the locus of the straight-line duct of said 2nd shell in the range inserted in said connector.
[0007] With the shell connection structure of this invention of having the above-mentioned configuration, if the 2nd shell is inserted in the connector fixed to the edge of the 1st shell watertight, this 2nd shell will be ****(ed) by shaft orientations with a **** means, and will be held watertight by the seal means. For this reason, both the 1st and 2nd shell makes a connector intervene, and is connected.
[0008] With the shell connection structure which is this invention on the other hand, from a connector or the 1st shell The arm of the connector fixed object fixed to this is extended to the 2nd shell side. The engagement section and the 2nd shell of this arm Or this engagement section and the extension section extended outside from the 2nd shell are being engaged in the location from which it separated from the production of the locus of the straight-line duct of the 2nd shell in the range inserted in the connector. For this reason, even if force which rotates the shell of the 1st or a 2nd relatively focusing on the locus of a straight-line duct works, the 2nd shell is not rotated by engagement of the extension section extended outside in response to the force which resists this force from the 2nd shell or 2nd shell in the location from which it separated from the production of the locus of a straight-line duct.
[0009]
[Other modes of invention] This invention can also take other following modes and said connector fixed object has the connector wearing hollow which imitated the appearance configuration of said connector in the 1st mode.
[0010] In this 1st mode, since it fits in, and a connector can post-install a connector fixed object in it as it is crowded in that connector wearing hollow, the existing shell connection structure where made the connector intervene and both the 1st and 2nd shell was connected is convertible into what relative rotation of a shell does not produce simple.
[0011]
[Embodiment of the Invention] Next, the gestalt of operation of the shell connection structure concerning this invention is explained based on an example. Drawing 1 is the outline decomposition perspective view of the shell connection structure of the 1st example. In addition, suppose that the explanation is omitted in the following explanation using the same sign about the same member as the member in the above-mentioned conventional shell connection structure.
[0012] As shown in drawing 1 , the shell connection structure of this 1st example makes a connector 10 intervene, and connects the 1st shell 14 and 2nd shell 18. And in addition to a connector 10, it has the clip 30 by which post-installation immobilization is carried out in the connector concerned at this 1st shell 14 and the 2nd shell 18 list.
[0013] A clip 30 has the plate-like superior lamella 32, the opposite plate 34 of the pair caudad projected from the both-sides side, and the clip arm 36 prepared caudad towards the center of an end side of the longitudinal direction. And let the center of an other end side of the longitudinal direction of this superior lamella 32 be the notching 38 of width of face slightly larger than the outer diameter of the 2nd shell 18. Moreover, opposite spacing of the opposite plate 34

is slightly narrowed from the width method of the width across flat 11 formed in the periphery of a connector 10. Furthermore, the effective diameter of the clip arm 36 is slightly made smaller than the outer diameter of the narrow diameter portion 13 formed in the 1st shell 14 side of a connector 10. The clip 30 of a configuration is fabricated by such dimension list using resin, such as polyacetal which has a mechanical strength, and the clip arm 36 will demonstrate elasticity in it, if opposite spacing can extend in opposite plate 34 list or a path is extended to it. And the clip arm 36 counters with the narrow diameter portion 13 in a connector 10, and this clip 30 is the sense which is located in the 2nd shell 18 side by which notching 38 was inserted in the connector 10, and as the drawing Nakaya mark shows, it is attached to a connector 10 from that upper part, so that it may illustrate. The outline cross section which met in the direction of an axis in the condition of having attached the clip 30 to the connector 10 at drawing 2 is shown.
[0014] Thus, since a width across flat 11 will be pinched with the opposite plate 34 with the opposite spacing narrower than the width method of a width across flat 11 as shown in drawing 3 which is the 3-3 line sectional view of drawing 2 if a clip 30 is attached, a clip 30 and a connector 10 are unified. Moreover, since a narrow diameter portion 13 is grasped by the clip arm 36 with the effective diameter smaller than the outer diameter of a narrow diameter portion 13, a clip 30 is fixed to a connector 10. And as shown in drawing 1 and drawing 2 , in the exterior of a connector 10, the 2nd shell 18 is bent and it is put into it by the notching 38 of a clip 30. That is, a clip 30 is the location from which it separated from the production of the locus of the straight-line duct of the shell of the 2nd shell 18 in the range inserted in the connector 10, and will engage with the 2nd shell 18 by this notching 38.
[0015] With the shell connection structure of an example where it explained above, the point that connector 10 the very thing plans **** of the 2nd shell 18 by the shell **** implement 26 and the extended flange 28 of the 2nd shell 18, and in that the seal of the 2nd shell 18 is planned with O rings 20 and 22, there are not the conventional thing and a changing place and they connect the 1st shell 14 and 2nd shell 18 by this connector 10.
[0016] You made it engaged in the location from which it separated from the production of the locus of that straight-line [in / moreover / on the other hand, a clip 30 is made to unite with a connector 10 with the shell connection structure of this example, and / for the 2nd shell 18 / in this clip 30 / the interior of a connector 10] duct. For this reason, even if force (turning effort) which rotates relatively either shell of the 1st shell 14 and the 2nd shell 18 focusing on the locus of this straight-line duct works, since the engagement location of the 2nd shell 18 and a clip 30 has separated from the production of the locus of a straight-line duct, the 2nd shell 18 is not rotated in response to the force which resists this turning effort.
[0017] Moreover, since a clip 30 makes the width across flat 11 of a connector 10 fit in between the opposite plates 34 and is post-installed in a connector 10, it has the following advantages.
** Since it is fixable to a connector 10 after the plug of the 2nd shell 18 to a connector 10, a clip 30 does not check the plug activity of the 2nd shell 18 at all.
** Since the 2nd shell 18 the very thing bent in the exterior of a connector 10 to the notching 38 of a clip 30 is engaged, don't need a special member but it is advantageous in cost.
** Only by exchanging the existing connector 10 for the connector which has a width across flat 11 and a narrow diameter portion 13, it is convertible into the shell connection structure which relative rotation of the 2nd shell 18 does not produce simple.
** Since only the range with which notching 38 engages in the exterior of a connector 10 should be bent, even if the 2nd shell 18 has the connection object of the other end of the 2nd shell 18 on the production of the locus of the straight-line duct in the interior of a connector 10, it is convenient. If it explains concretely, as an alternate long and short dash line shows to drawing 2 , the 2nd shell 18 should just be curving in the shape of U character in the engagement part of notching 38.
[0018] Next, other examples are explained. In addition, suppose that a different configuration from the above-mentioned example is explained in explanation of the following examples.
[0019] With the shell connection structure of the 2nd example, as shown in drawing 5 which is the outline cross section which met in the perspective view and the direction of an axis of drawing 4 , it has connector 10A replaced with a connector 10. This connector 10A continues

and has the lobe 40 of a curve cross section in the plug side edge section of the 2nd shell 18. And let the center of an edge of the longitudinal direction of this lobe 40 be the notching 42 of width of face slightly larger than the outer diameter of the 2nd shell 18.

[0020] Also with the shell connection structure of this 2nd example, as shown in drawing 4 and drawing 5 , the 2nd shell 18 is bent, and intrusion rareness and the 2nd shell 18 are the locations from which it separated from the production of the locus of the straight-line duct inside a connector 10, and will engage with a lobe 40 by notching 42 at this notching 42. For this reason, the 2nd shell 18 is not relatively rotated according to the shell connection structure of the 2nd example. Moreover, since the lobe 40 is united with the connector 10 from the beginning with the shell connection structure of the 2nd example, parts control becomes easy and is desirable. In this case, since the 2nd shell 18 is bent and it can put in after the plug of the 2nd shell 18 at notching 42 even if the lobe 40 is united with the connector 10, the plug activity of the 2nd shell 18 is not checked. In addition, the lobe 40 of your being prepared in the connector 10 like a clip 30 in the monotonous cross section is natural.

[0021] With the shell connection structure of the 3rd example, as shown in drawing 7 which is the outline cross section which attached with drawing 6 which is the outline decomposition perspective view, and met in the direction of an axis in a condition, it has clip 30A replaced with a clip 30. This clip 30A has plate-like superior lamella 32A of the die length of wrap extent for a connector 10 from that top face, like a clip 30, has the opposite plate 34 in that both-sides side, and has the clip arm 36 in the center of an end side of a longitudinal direction. And in the center of an other end side of the longitudinal direction of superior lamella 32A, it has the shell engagement arm 44 in the lower part. As this shell engagement arm 44 is shown in drawing 8 which is the 8-8 line expanded sectional view of drawing 7 , it considers as the radii-like curve cross section so that that cross section may grasp the 2nd shell 18, and that bore is slightly enlarged from the outer diameter of the 2nd shell 18. Moreover, of the opposite plate 34 and the clip arm 36, if fixed, as for the shell engagement arm 44, clip 30A is formed in the connector 10 so that the one and straight-line part which imitated the duct of the 2nd shell 18 and was extended from the edge of a connector 10 so that it might illustrate may curve by the middle.

[0022] With the shell connection structure of this 3rd example, the 2nd shell 18 is bent and it is put in so that the shell engagement arm 44 of clip 30A may be imitated at that path. Therefore, even if it is the shell connection structure of this 3rd example, the 2nd shell 18 is the location from which it separated from the production of the locus of the straight-line duct inside a connector 10, and is engaged and grasped with the shell engagement arm 44 of clip 30A. For this reason, the 2nd shell 18 is not relatively rotated according to the shell connection structure of the 3rd example. In addition, after the 2nd shell 18 is put in by the straight-line part of the shell engagement arm 44, it is inserted in a connector 10, curves after that, and is engaged for it and grasped by the shell engagement arm 44.

[0023] With the shell connection structure of the 4th example, the clip 50 which replaces with the above-mentioned clips 30 and 30A, and is shown in the outline perspective view of drawing 9 is used. This clip 50 is formed in the box configuration which has the superior lamella 32 in a clip 30 as one wall surface. And a clip 50 has the side-face plate 52 replaced with the opposite plate 34, and it is constituted so that a lid 54 may close opening of the side-face plate 52. In this case, opposite spacing of the side-face plate 52 is slightly made larger than the width method of the width across flat 11 of a connector 10. The engagement arm 56 which has a projection is formed at the tip, and the engagement section 58 to which this engagement arm 56 enters and engages with one side of the side-face plate 52 is formed in the lid 54. In addition, the back up plate 60 is formed in the end of a clip 50 for reinforcement, and the opening 62 into which a narrow diameter portion 13 enters reasonable is vacated for this back up plate 60.

[0024] If it is in this clip 50, it is attached to a connector 10 in the condition that the lid 54 is open, and a connector 10 is contained by the clip 50 so that a width across flat 11 may be inserted between the side-face plates 52. Subsequently, when a lid 54 is shut, a clip 50 encloses a connector 10 and is fixed united with this connector 10. And the 2nd shell 18 is the location from which it was bent in the exterior of a connector 10 and separated in the notching 38 of a superior lamella 32 from the production of the locus of intrusion rareness and the straight-line duct inside a connector 10, and engages with a superior lamella 32. For this reason, the 2nd shell 18 is not relatively rotated according to the shell connection structure of the 4th example.

[0025] Although the example of this invention was explained above, as for this invention, it is needless to say that it can carry out in the mode which becomes various in the range which is not limited to an above-mentioned example or an above-mentioned operation gestalt at all, and does not deviate from the summary of this invention.

[0026] For example, it can change to bending the 2nd shell 18 and putting into notching 38, and can also constitute as follows. That is, extension section 18a extended to that exterior can be fixed and prepared, and it can also be made to engage with the 2nd shell 18 in the location which separated from the 2nd shell 18 and superior lamella 32 from the production of the locus of the straight-line duct inside a connector 10 because this extension section 18a enters into notching 38, as a two-dot chain line shows drawing 2 .

[Translation done.]

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2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] The outline decomposition perspective view of the shell connection structure of the 1st example.
[Drawing 2] The outline sectional view which met in the direction of an axis in the condition of having attached the clip 30 to the connector 10.
[Drawing 3] The 3-3 line sectional view of drawing 2 .
[Drawing 4] The outline perspective view of the shell connection structure of the 2nd example.
[Drawing 5] The outline sectional view in which carrying out cross sectional view of the connector 10A in the shell connection structure of the 2nd example, and showing it along the direction of an axis.
[Drawing 6] The outline decomposition perspective view of the shell connection structure of the 3rd example.
[Drawing 7] The outline sectional view which met in the direction of an axis in the condition of having attached clip 30A to the connector 10.
[Drawing 8] The 8-8 line expanded sectional view of drawing 7 .
[Drawing 9] The outline perspective view of the clip 50 in the shell connection structure of the 4th example.
[Drawing 10] The outline sectional view in which carrying out cross sectional view of the connector in the conventional shell connection structure, and showing it along the direction of an axis.
[Description of Notations]
10 10A -- Connector
11 -- Width across flat
12 -- Bamboo shoot opening
13 -- Narrow diameter portion
14 -- The 1st shell
16 -- Receipt hole
18 -- The 2nd shell
18a -- Extension section
20 22 -- O ring
24 -- Edge receipt hole
26 -- Shell **** implement
28 -- Extended flange
30 30A -- Clip
32 32A -- Superior lamella
34 -- Opposite plate
36 -- Clip arm
38 -- Notching
40 -- Lobe
42 -- Notching
44 -- Shell engagement arm
50 -- Clip

52 -- Side-face plate
54 -- Lid
56 -- Engagement arm
58 -- Engagement section
60 -- Back up plate
62 -- Opening

[Translation done.]

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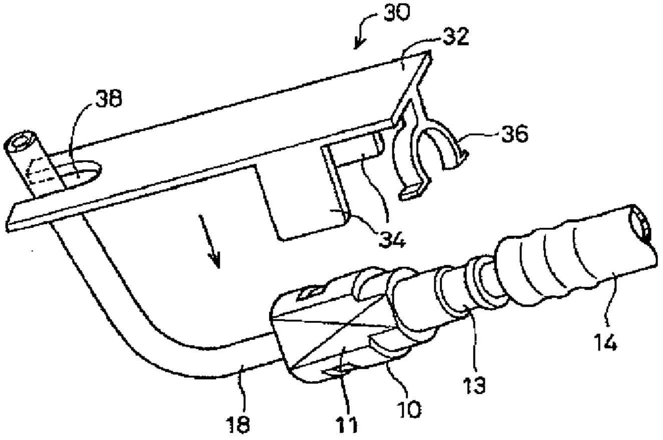
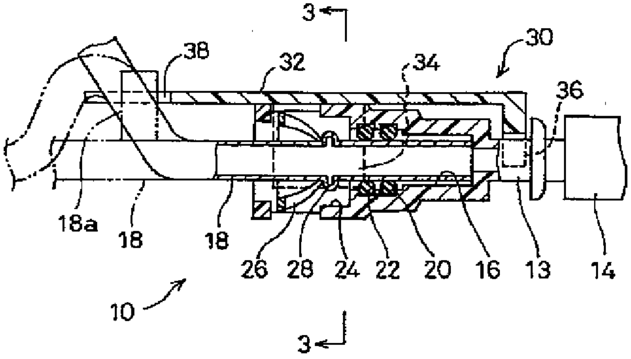
DRAWINGS

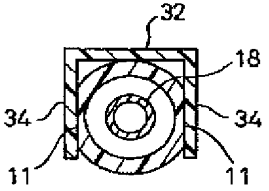
[Drawing 1]



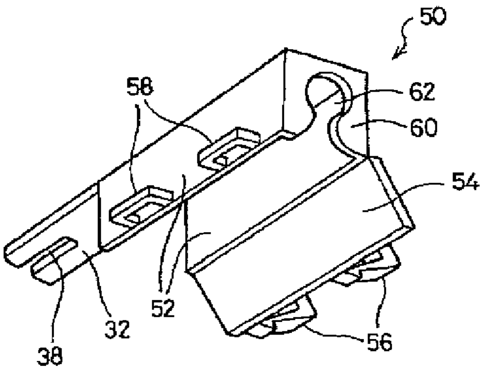
[Drawing 2]



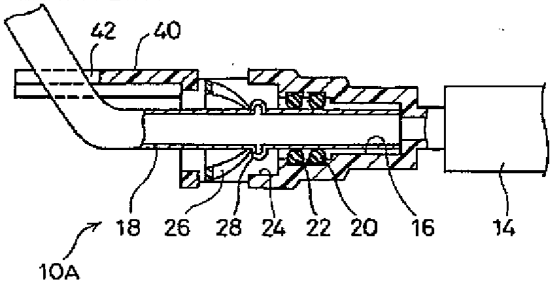
[Drawing 3]



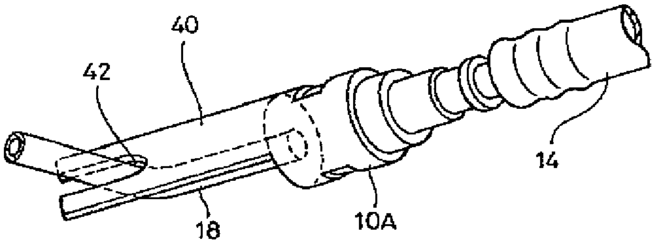
[Drawing 9]



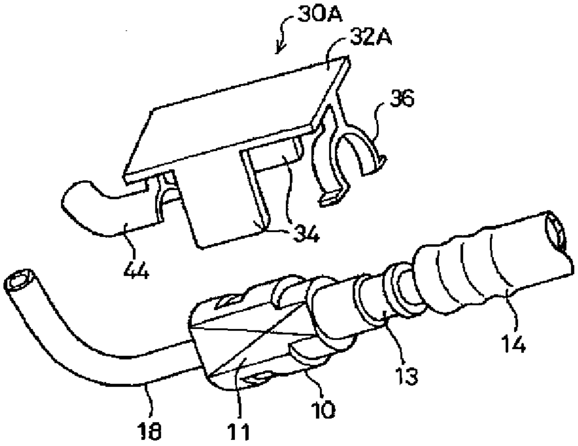
[Drawing 5]



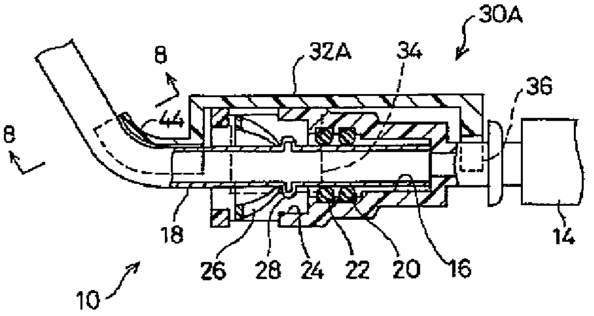
[Drawing 4]



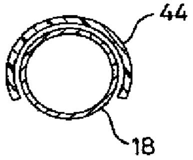
[Drawing 6]



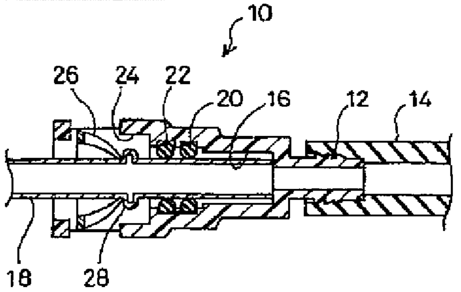
[Drawing 7]



[Drawing 8]



[Drawing 10]



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